

Web Design

My Software Skills

Version 1.0


Contents

Web Design (1) – IDE and Tags	3
Web Design IDE.....	3
HTML – Headings and paragraphs	4
HTML - Lists.....	6
HTML - Images	7
HTML - Links.....	8
Web Design (2) – Style	9
Inline style	9
Internal CSS - Selectors	10
Styling elements - id selectors	11
Navigation Bars	13
Colours	14
Web Design (3) – More Pages.....	16
Adding Pages.....	16
External Style Sheets.....	18
Site Structure	19
Web Design (4) - Positioning.....	20
Image and Text Positioning.....	20
Classes.....	21
Padding	23

Web Design (1) – IDE and Tags

Web Design IDE

- Step 1: One key component of programming is the choice of IDE (Integrated Development Environment). You can have local ones or ones which are hosted online. We are going to use the Web Lab development environment from <https://code.org>. The advantage of this is that you can see how the pages are rendered as you work on them.
- Step 2: Log in to code.org and open a new Web Lab project. Save it with the name Shackleton.
- Step 3: Select the *index.html* file and check that see the basic template for an html file is displayed (as below):

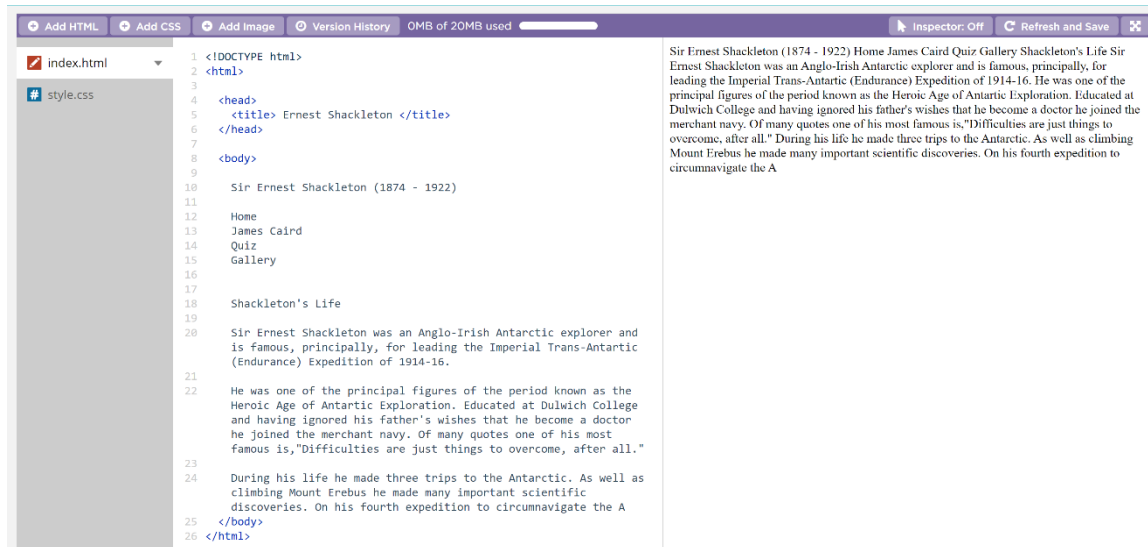


The screenshot shows the Web Lab IDE interface. At the top, there is a purple header bar with buttons for 'Add HTML', 'Add CSS', 'Add Image', and 'Version History'. To the right of these buttons, it says 'OMB of 20MB used' with a progress bar. Below the header, there is a file explorer on the left showing two files: 'index.html' (with a red pencil icon) and 'style.css' (with a blue hash icon). The main area on the right displays the content of 'index.html', which is a basic HTML template:

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5 </head>
6
7 <body>
8
9 </body>
10 </html>
```

HTML – Headings and paragraphs

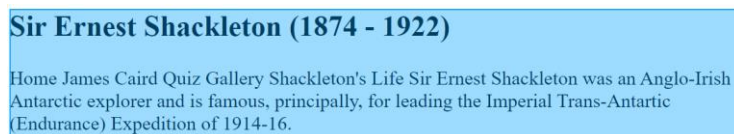
- Step 1: Download the zip file for this exercise and unzip it. Check it contains a the *shackleton.txt* file and several images.
- Step 2: Give your page the title Ernest Shackleton using the `<title>` tags in the `<head>` area.
- Step 3: Open *shackleton.txt* and paste the text from there between the `<body>` tags.
- Step 4: The page now looks like this with the rendered text on the right.



- Step 5: Click on **Refresh and Save** (at the top of the right-hand pane). Click on **Version History**. You will see the versions you have saved and you can then roll back to a previous version should you need to:



- Step 6: Use the `<h2>` and `</h2>` tags to put the first line of text “Sir Ernest Shackleton (1874 – 1922)” as a heading. These go before and after the text. The right hand pane should now look like this:



- Step 7: Find the text “Shackleton’s Life” and use the `<h3>` and `</h3>` tags to put this as a heading.

Step 8: Finally, each of the paragraphs below “Shackleton’s Life” require `<p>` and `</p>` tags to create 3 separate paragraphs. Your page should now look like this:

Sir Ernest Shackleton (1874 - 1922)

Home James Caird Quiz Gallery

Shackleton's Life

Sir Ernest Shackleton was an Anglo-Irish Antarctic explorer and is famous, principally, for leading the Imperial Trans-Antarctic (Endurance) Expedition of 1914-16.

He was one of the principal figures of the period known as the Heroic Age of Antarctic Exploration. Educated at Dulwich College and having ignored his father's wishes that he become a doctor he joined the merchant navy. Of many quotes one of his most famous is, "Difficulties are just things to overcome, after all."

During his life he made three trips to the Antarctic. As well as climbing Mount Erebus he made many important scientific discoveries. On his fourth expedition to circumnavigate the Antarctic he died of a heart attack. He was buried on the Island of South Georgia.

Step 9: Save your work.

HTML - Lists

Step 1: Between the headings there are 5 lines of text: Home, James Caird, Quiz and Gallery. This is a list of topics for the website and will eventually become a navigation bar. Use the unordered list tags `` and list element tags `` to put these into an unordered list. The structure is as below:

```
<ul>
<li> Home </li>
<li> James Caird </li>
<li> Quiz </li>
<li> Gallery </li>
</ul>
```

Step 2: Render your webpage to make sure you can see the bullet points.

Sir Ernest Shackleton (1874 - 1922)

- Home
- James Caird
- Quiz
- Gallery

Shackleton's Life

Sir Ernest Shackleton was an Anglo-Irish Antarctic explorer and is famous, principally, for leading the Imperial Trans-Antarctic (Endurance) Expedition of 1914-16.

HTML - Images

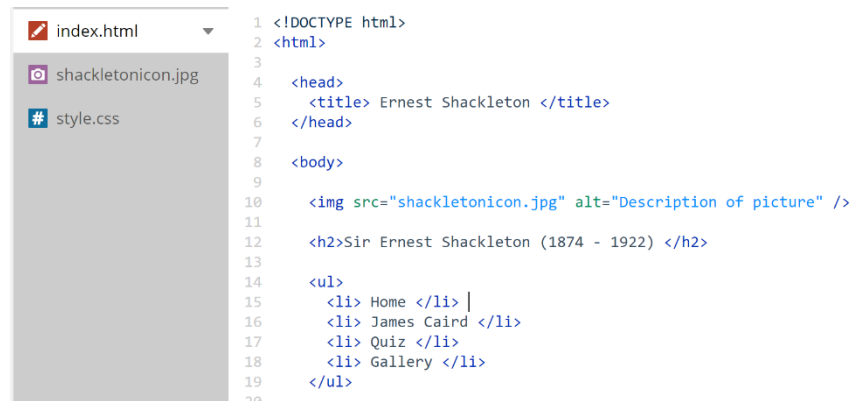
Step 1: Use the **Add Image** option to upload the image *shackletonicon.jpg*.

Step 2: Use the `` tag to put an image on the page. This is one of the tags which does not come as a pair and uses the following syntax:

```

```

Step 3: Using this tag, place the *shackletonicon.jpg* image on your page before the heading **Sir Ernest Shackleton (1874 – 1922)**.



Step 4: Notice the *alt* attribute is used to give the picture a description. You can use "Ernest Shackleton at Dulwich College". Here is the result:



Sir Ernest Shackleton (1874 - 1922)

- Home
- James Caird
- Quiz
- Gallery

HTML - Links

Step 1: Look at the first main paragraph of text which starts Sir Ernest Shackleton. We are going to convert this text into a link. We do this using the anchor tag as follows:

```
<p><a href="URL link" target="_blank"> Sir Ernest Shackleton </a>
```

Step 2: Find the URL (Uniform Resource Locator) to Ernest Shackleton's Wikipedia entry and use that as the [href](#). The target attribute is set so that the Wikipedia page will open in a new browser tag.

Step 3: Check your page looks like the screenshot below and that the link works and takes you to Shackleton's Wikipedia page.

Shackleton's Life

[Sir Ernest Shackleton](#) was an Anglo-Irish Antarctic explorer and is famous, principally, for leading the Imperial Trans-Antartic (Endurance) Expedition of 1914-16.

Step 4: **Refresh and Save** your page.

Web Design (2) – Style

The basic HTML tags generally defines the **content of the page** i.e. puts text and images on a page. In order to **style a web page**, we use CSS (cascading style sheets). There are three way of doing this:

- Inline** The css is written as an attribute of the element it affects. This overrides all other css.
- Internal** `<style>` tags can be used to define any css you want to apply on a page This overrides external css.
- External** css is defined in an external file (e.g. *style.css*) and linked to the web page. This is useful in order to apply consistent styling across a whole website.

Inline style

Step 1: Start by defining a basic font size, font colour and background colour to the page. We do this by adding the style attribute to the `<body>` element. Replace the `<body>` tag with this:

```
<body style="font-family:candara; background-color:lightblue; color:darkblue">
```

Syntax is important here. The semi-colon separates the attribute from the value and the colon separates the attribute-value pairs. Don't forget the quotation marks.

```
"attribute : value ; attribute : value"
```

As all our content is enclosed inside the `<body>` tags all text on our page will be affected.

Step 2: Change the background colour of the list by replacing the `` tage with this:

```
<ul style="background-color:pink">
```

Note: This will only apply to the `` element. Also note the spelling of **color** (American!).

Step 3: Here is what the page now looks like:



Internal CSS - Selectors

It is possible to further enhance the page by continuing with this approach and applying styles to the different elements. However, very soon it will become difficult to read the html as our content gets obscured by the css styling. In order to detach the CSS from the content we use internal CSS which is defined in the `<head>` part of the webpage.

Look at this code which is between the `<head>` tags.

```
<head>

  <title> Ernest Shackleton </title>

  <style>

    body {background-color:lightblue;

          font-family:candara;

          font-size:12pt;

          color:darkblue}

    ul {background-color:pink}

  </style>

</head>
```

You will see it is very similar to the style we used in the previous task. The only exception is it is between `<style>` tags and in `<head>` part of the page. We have used the **selectors** `body` and `ul` to tell the css where the style needs to be applied. Note the use of brackets `{ }`.

- Step 1: Put the code above into the *index.html* file in the `<head>` part of the page.
- Step 2: You no longer need the inline styling which you added as part of the last task so delete it from the html and leave just the `<body>` and `` tag as they were.
- Step 3: The webpage should now appear exactly the same, but the HTML in the body of the file is less cluttered with styling as that has all moved into the `<head>` part of the page. This is internal styling.

Styling elements - id selectors

One important feature of web design is to be able to divide pages into sections and label them. This can be done by using `<div>` `</div>` tags and the `id` attribute.

Step 1: Structure your page as follows making sure the correct html is between the correct div tags and that the ids are spelt correctly.

```
<div id="header">
    image and heading
</div>

<div id="nav">
    navigation list
</div>

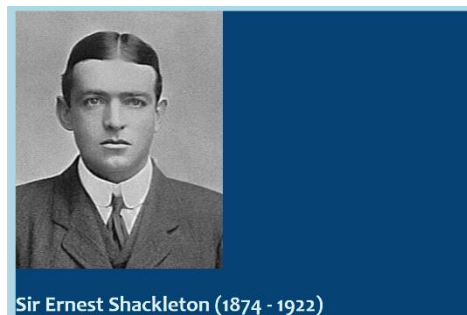
<div id="content">
    3 paragraphs of text
</div>
```

Step 2: The page is now divided into 3 sections which will be given a unique id:

1. `header` - The `<h2>` heading and the image of Shackleton
2. `nav` - The navigation list between the `` tags
3. `content` - The `<h3>` heading and 3 paragraphs `<p>`

Step 3: CSS can now be applied to our named dividers using the Internal CSS inside the style tags at the top of the page. Note the use of the `#` to refer to a named element. Try adding the following to change the colour of the background and text inside the header div tags.

```
#header{background-color:#064273;color:#def3f6}
```



Step 4: It is also possible to combine id and element selectors. To style an element within a selector element use the following CSS syntax:

```
#header img{height:150px;}
```

This should change the height of any image within the `header` div to `150px` but it does not change the size of pictures that are not in the header div.

Here is what the page now looks like:



Sir Ernest Shackleton (1874 - 1922)

- [Home](#)
- [James Caird](#)
- [Gallery](#)
- [Quiz](#)

Shackleton's Life

[Sir Ernest Shackleton](#) was an Anglo-Irish Antarctic explorer and is famous, principally, for leading the Imperial Trans-Antarctic (Endurance) Expedition of 1914-16.

He was one of the principal figures of the period known as the Heroic Age of Antarctic Exploration. Educated at Dulwich College and having ignored his father's wishes that he become a doctor he joined the merchant navy. Of many quotes one of his most famous is, "Difficulties are just things to overcome, after all."

During his life he made three trips to the Antarctic. As well as climbing Mount Erebus he made many important scientific discoveries. On his fourth expedition to circumnavigate the Antarctic he died of a heart attack. He was buried on the Island of South Georgia.

Navigation Bars

Step 1: Currently our navigation links are arranged vertically but it would be more in keeping with modern navigation to have them horizontal. We can convert our `` elements so they display on just one line (inline) using this css.

```
#nav li {display: inline}
```

Step 2: Set the background colour and align the text of the navigation bar to centre. Use this css:

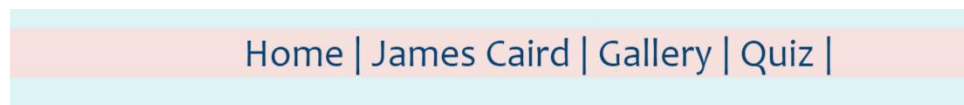
```
#nav{background-color:#f6e1de;text-align:center}
```

The css for the `` element can now be removed from the style.

Step 3: Finally, put a vertical bar after each link using the html `|`

```
<ul>
<li>Home</li> &vert;
<li><a>James Caird</a></li> &vert;
<li>Gallery </li> &vert;
<li>Quiz</li> &vert;
</ul>
```

The result should be as below:







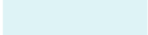
Colours

One of the key design features of a webpage is the colours you choose. There are several factors to remember when choosing a colour scheme. You need to think of the audience – young, old, formal, informal - and remember that some people are for example colour-blind.

Step 1: The Shackleton website is about an explorer who spent a lot of time at sea, so here is a palette which gives some different blues:

<https://www.color-hex.com/color-palette/3497>

Colors in Palette

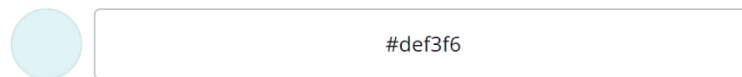
Color	Hex	RGB
	#064273	(6,66,115)
	#76b6c4	(118,182,196)
	#7fcdff	(127,205,255)
	#1da2d8	(29,162,216)
	#def3f6	(222,243,246)

Step 2: To find colours which go with some of these we need a colour wheel.

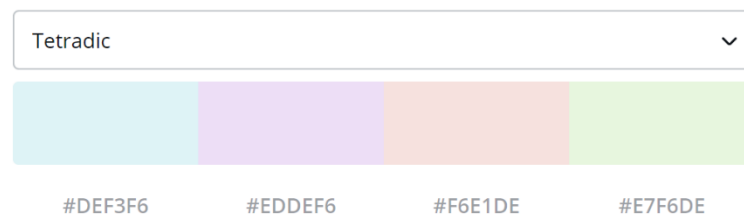
<https://www.canva.com/colors/color-wheel/>

Using the #def3f6 (light blue) background colour we get a triadic colour combination (these are colours on opposite sides of the colour wheel) as shown.

1. Pick a color



2. Choose a color combination



As well as the tetradic colour combination there are other options such a complimentary, triadic and analogous which give different compatible colour options.

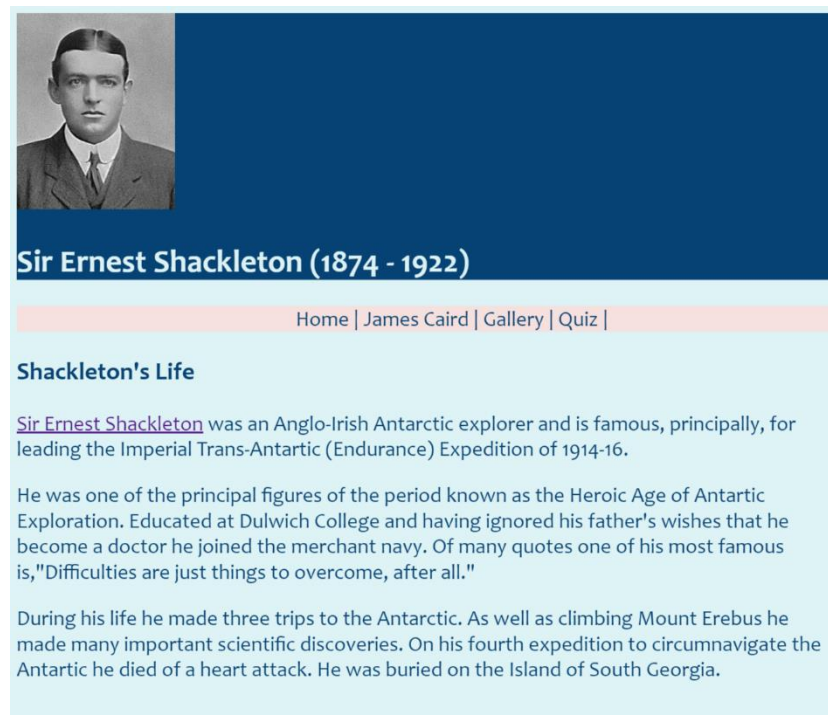
Step 3: Using these a range of colours that work well with each other can be used on the page. Here is a table which uses some of them.

Colour	Element	Attribute
#def3f6	body	background colour
#064273	header	background colour
#f6e1de	navigation bar	background colour
#064273	body	text colour
#def3f6	header	text colour

Step 4: Here's a check on the css styles applied so far including the changes to the basic background and font colours:

```
<style>
  body {background-color:#def3f6;
        font-family:candara;
        font-size:12pt;
        color:#064273}
  #header{background-color:#064273;color:#def3f6}
  #header img{height:150px;}
  #nav{background-color:#f6e1de;text-align:center}
  #nav li {display: inline}
</style>
```

Here is what the page should look like:



Web Design (3) – More Pages

Adding Pages

Most websites have links on other websites for example, the *index.html* already has a link to the Ernest Shackleton Wikipedia page. However, sites also have an internal structure where the pages are linked to each other.

Step 1: On the *index.html* page, find the navigation links and change the James Caird link to the following:

```
<li><a href="jamescaird.html">James Caird</a></li> &vert;
```

This links to a new page *jamescaird.html* which we will create on the same website.

Step 2: Click on the **Add HTML** and rename it as *jamescaird.html*. The structure of this page is similar to the *index.html* page.

```
<!DOCTYPE html>

<html>

<head>

    <title> James Caird </title>

</head >

<body>

<div id="header">

    <h2> James Caird </h2>

</div>

<div id="nav">

    <ul>

        <li>Home</li> &vert;

        <li><a href="jamescaird.html">James Caird</a></li> &vert;

        <li>Gallery </li> &vert;

        <li>Quiz</li>

    </ul>

</div>

<div id = "content">

    <h3> James Caird </h3>

    <p> </p>

</div>

</body>

</html>
```

Step 3: Upload the picture *jamescaird.jpg* to the website.

Step 4: Add some text about the James Caird which you can find from the internet. As this is for educational purposes you should be OK in terms of copyright.

External Style Sheets

Step 1: As the *jamescaird.html* page is on the same site as the *index.html* page we want some sort of consistency in style and design. This is achieved using an **external style sheet**. The line below is from the html template and links the page to the *style.css* file. repl creates a *style.css* and the link automatically for you. This line will need to be on all pages so they pull in the css from the style sheet.

```
<link href="style.css" rel="stylesheet" type="text/css" />
```

Step 2: To get a consistent background colour and header colour, move the css from inside the `<style>` tags on the *index.html* page into the *style.css*.

```
body {background-color:#def3f6;
      font-family:candara;
      font-size:12pt;
      color:#064273}

#header{background-color:#064273;color:#def3f6}
#header img{height:150px;}
#nav{background-color:#f6e1de;text-align:center}
#nav li {display: inline}
```

Step 3: The css and `<style>` tags are now not needed in the head of the html page but the following line is:

```
<link href="style.css" rel="stylesheet" type="text/css" />
```

Step 4: By putting this line in *index.html* and *jamescaird.html* pages should now have consistent styles.

Site Structure

The site structure is coming along and here is the completed navigation bar with links to all the pages of the website.

```
<div id="nav">
  <ul>
    <li><a href="index.html">Home</a></li> &vert;

    <li><a href="jamescaird.html">James Caird</a></li> &vert;

    <li><a href="quiz.html">Quiz</a></li> &vert;

    <li><a href="gallery.html">Gallery</a></li> &vert;

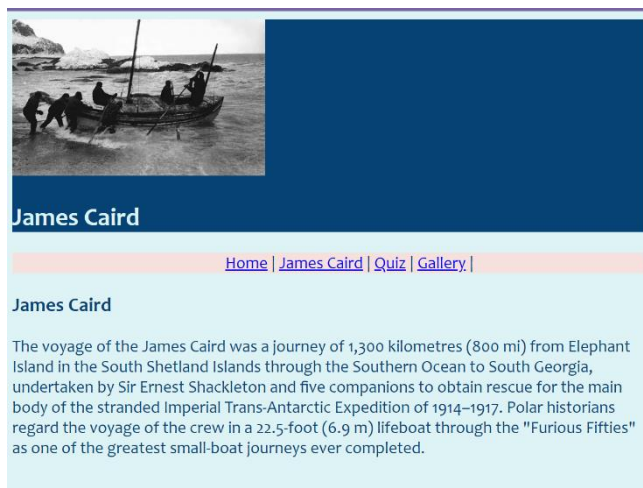
  </ul>
</div>
```

Step 1: Create all the html pages you need for the site, so the links work.

Step 2: Make sure each page has:

1. A title
2. A link to the external style sheet.
3. The correctly named divs (header, nav and content).
4. A text heading and picture.

Step 3: Here is a screenshot of the James Caird page so you can see what the pages look like.



Web Design (4) - Positioning

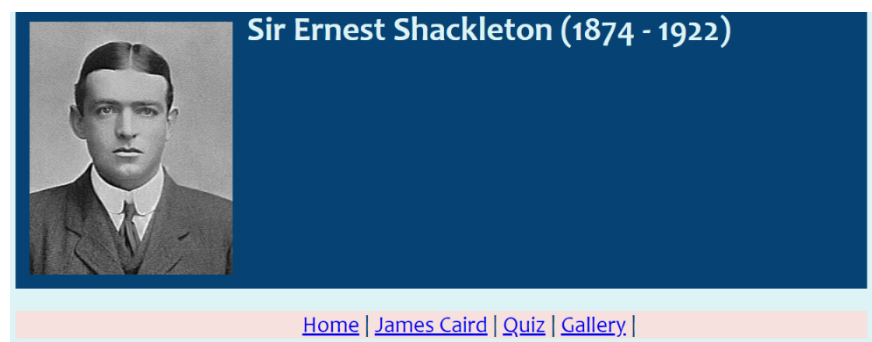
Image and Text Positioning

Step 1: Our header section at the top of the page is not quite right as it would be better to have the text to the right of the picture and centred both vertically and horizontally. Update the #header css (in the external style sheet) so that it has a fixed height of 200px and covers 100% of the width of the page.

```
#header{background-color:#064273;color:#def3f6;height:200px;width:100%}
```

Step 2: In order to place the picture of Shackleton on the left, the html image tag should come before the <h2> text and the following css can be applied. Note that this will only apply to images in the header div. The margin and height settings mean the picture will be centred.

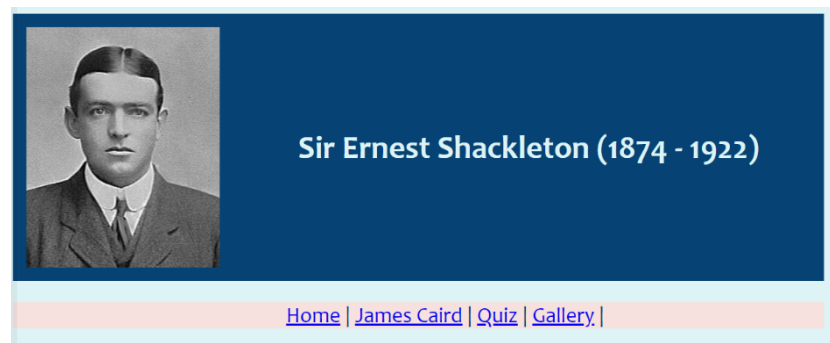
```
#header img{float:left;height:90%;margin:10px 10px auto}
```



Step 3: The <h2> header text would be better if it were centred both vertically and horizontally. There are several ways of doing this and here is one:

```
#header h2{text-align:center; vertical-align:middle; line-height:200px}
```

Again, this only applies to <h2> heading in the header div. Setting the **line-height** means the vertical alignment will work.



Step 4: Save your work.

Classes

Step 1: Update the *gallery.html* page so it has header text “Pictures of the Antarctic”, the picture *antarctic.jpg* and the same navigation bar as the other pages.



Step 2: Upload the three pictures *whale.jpg*, *penguins.jpg* and *iceberg.jpg*.

Step 3: Put this html on the gallery page inside the content div.

```
<div class="gallery">
  
  <div class="desc">Penguins</div>
</div>
```

Step 4: You will notice that the first div uses `class="gallery"`. This is a **class selector** in css. Unlike id selectors (identified by # in your css) which can only be used once on a page, class selectors (identified by a .) can be used many times.

Put this css in to your external style sheet to style the image and description:

```
.gallery {
  margin: 5px;
  border: 1px solid white;
  float: left;
  width: 30%;
  height: 300px
}

.gallery img {
  width: 100%;
  height: 100%;
  object-fit: cover
}

.desc {
  padding: 15px;
  text-align: center;
}
```

Step 5: By copying the html in step 3 you can now add the other two pictures to your gallery. Make sure you change the alt text and the description as well as the src attribute.

Step 6: If you don't have three pictures in a row then your web page is not wide enough for the pictures so you will need to increase the width of the browser screen. Your page should look like this:



Pictures of the Antarctic

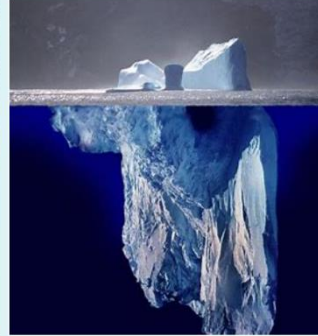
[Home](#) | [James Caird](#) | [Quiz](#) | [Gallery](#) |



Penguins



A whale



Penguins

Padding

The navigation bar looks narrow and the links are quite close together. To space elements out we use margins and padding.

Padding

Step 1: Change the nav select css on your external style sheet to this:

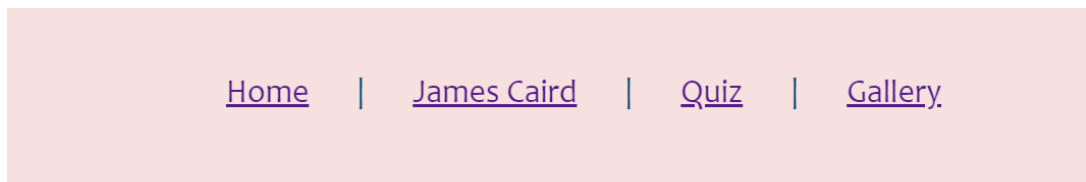
```
#nav{background-color:#f6e1de;text-align:center;padding: 20px 0px 20px 0px}
```

The padding attribute puts 20px of padding at the top and bottom of the #nav element. As the height of the element is not defined it will just expand it with padding around.



Step 2: Put padding between the links by updating the #nav li selector as follows:

```
#nav li {display: inline; padding: 0px 20px 0px 20px;}
```



Notice that the padding values are top, left, bottom, right so here padding is added to the left and right of the list elements. It is also possible to single out individual parts of the padding by using, for example, `padding-left:20px` to alter just the left padding.